

A 3.5 W Output, Diode-Pumped, Q-switched 532 nm Laser

Hamid Hemmati and James R Lesh
Jet Propulsion Laboratory, California Institute of Technology
4800 Oak Grove Dr., M/S 161-135, Pasadena, CA 91109

A diode-pumped laser with over 11 W of continuous-wave 1064 nm, and 3.5 W of frequency-doubled average power at 50 kHz pulse repetition frequency, has been developed. A single Nd:YAG rod was pumped with the combined output of three fiber-coupled diode laser arrays. Each pump laser was capable of low CW output. The fiber output of each pump laser was first collimated and then focused with a single lens onto one end of a cooled Nd:YAG rod. The resonator mirrors for the L-shaped cavity were selected such that thermal lensing in the laser crystal is mostly compensated for. The Nd:YAG rod and an acousto-optical Q-switcher were located in one arm of the cavity while the KTP frequency-doubler was on the other arm. The 532 nm output beam quality (M^2) is less than 1.5.

Conference

1 Diode-Pumping of Average Power Solid-State Lasers. Conference chairs: R. J. Beach, B. Comasky, S.I'. Velsko.

Presentation

An oral presentation is preferred.

Biography

H. Hemmati received M.S. from USC and Ph.D. from Colorado State University both in Physics. He joined the JPL's Optical Communications Group in 1976. His current interests are development of diode-pumped solid-state laser transmitters, and design and development of small optical comm packages for future mini-spacecraft missions.

J.R. Lesh received Ph.D. from UCLA in Electrical Engineering. He is Supervisor of JPL's Optical Communications Group. His current interests are laser communications from space and communications theory. Dr. Lesh was the Principal Investigator for the laser communication to the Galileo spacecraft experiment, demonstrated successfully in 1 Dec. of 92. He is a Fellow of IEEE.